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ABSTRACT

In its third funding year, Jamaica High School's Computer-Assisted Bilingual/Bicultural Multi-Skills Project used computerized and non-computerized instruction to help 132 native speakers of Haitian Creole/French and Spanish develop English language, native language, and content-area skills. The goal was to help these students participate successfully in the school's mainstream program and then go to college, trade school, or enter the job market. Classroom instruction was complemented by tutoring and career planning, and sought to develop parental understanding and involvement to increase student motivation. Analysis of student achievement data indicates: (1) the proposed English language objective was met for the fall; (2) overall, students met the native language arts objective in both semesters; (3) program students achieved passing rates as high as those of mainstream students in science, social studies, and mathematics; and (4) students met objectives in attendance and suspension rates. Recommendations for improvement are listed. (MSE)

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O.E.A. Evaluation Section Report

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Grant Number: G00-863-5376

JAMAICA HIGH SCHOOL

COMPUTER-ASSISTED BILINGUAL/ BICULTURAL MULTI-SKILLS PROJECT

1986-1987

Prepared by the O.E.A.
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A SUMMARY OF THE REPORT

Jamaica High School's Computer-Assisted Bilingual/Bicultural Multi-Skills Project was in its final year of a three-year funding cycle. The project used computerized and non-computerized instruction to help 132 native speakers of Haitian Creole/French and Spanish -- most of them recent emigrants from rural areas -- to develop their English-language, native-language, and content-area skills. The goal was to help these students participate successfully in Jamaica High School's mainstream program and then go on to college, trade school, or enter the job market.

Classroom instruction was complemented by tutoring and career planning activities. In addition, the project sought to develop parental understanding and involvement as a means of increasing student motivation. Curriculum development and staff development activities, involving project staff members and foreign language teachers, were equally vital aspects of the project.

Title VII funds paid for the project's two resource teachers and support service staff. Teaching costs were met by tax-levy and other funds. Seventeen members of the Jamaica High School staff devoted some part of their working day to project-related activities. The project was headed and managed by the chairperson of the school's bilingual, E.S.L., and foreign language department. The principal was integrally involved in planning and overseeing the project.

Program objectives were assessed in English-language development (Criterion Referenced English Syntax Test [CREST]); mastery of native language (teacher-made tests); content-area subjects (teacher-made tests); and attendance and suspensions (program and school records). Analysis of student achievement data indicates that:

-- Students tested at Levels 1 and 2 of the CREST during the fall semester mastered an average of 1.7 objectives per 20 days of treatment. Thus, the proposed objective was met for the fall.

-- Overall, students met the objective of a 75 percent passing rate in native language arts courses both semesters.

-- Program students achieved passing rates as high as those of mainstream students in science, social studies, and math. Thus, the proposed objective was met.

-- Program students met the proposed objectives in the areas of attendance and suspension: that they would maintain an attendance rate equal to or greater than that of mainstream students, and that their suspension rate would

be the same or lower than that of mainstream students.

The evaluation team makes the following recommendations to improve the project:

-- increase the number of content-area courses taught with an E.S.L. approach to enable non-Spanish-speaking students to enroll in credit-bearing courses during their first months at Jamaica High School;

-- provide more training in E.S.L. teaching techniques for monolingual content-area teachers assigned to teach LEP students;

-- increase the number of computer workshops for parents;

-- make plans to ensure that the project's target group is able to use the computers purchased with Title VII funds after the termination of this funding.

ACKNOWLEDGEMENTS

The production of this report, as of all Office of Educational Assessment Bilingual Education Evaluation Unit reports, is the result of a cooperative effort of regular staff and consultants. In addition to those whose names appear on the cover, Arthur Lopatin has edited the manuscripts. Margaret Scorza has reviewed and corrected reports, and has coordinated the editing and production process. Shelley Fischer and Martin Kohli have spent many hours, creating, correcting, and maintaining data files. Rosalyn Alvarez, Donna Plotkin, and Milton Vickerman have interpreted student achievement and integrated their findings into reports. Finally, Betty Morales has worked intensively to produce, duplicate, and disseminate the completed documents. Without their able and faithful participation, the unit could not have handled such a large volume of work and still have produced quality evaluation reports.

TABLE OF CONTENTS

		PAGE
I.	OVERVIEW	1
	Program Description	2
	Program Organization and Staff	3
II.	STUDENT CHARACTERISTICS	6
III.	FINDINGS	13
	English As a Second Language	13
	Native Language Arts	18
	Content-Area Subjects and Specialized Courses	21
	Affective Domain	27
	Curriculum Development	28
	Staff Development	28
	Academic Advisement and Career Planning	29
	Parental Involvement	30
	Long-Range Objectives	31
IV.	CONCLUSIONS AND RECOMMENDATIONS	33
	Conclusions	33
	Recommendations	33

LIST OF FIGURES AND TABLES

		PAGE
Figure 1:	Distribution of Program Students by Native Language.	10
Table 1:	Number of Students Leaving the Program.	6
Table 2:	Number and Percent of Program Students by Country of Birth.	9
Table 3:	Number of Program Students by Age and Grade.	11
Table 4:	Students' Years of Education by Grade.	12
Table 5:	Results of the Criterion Referenced English Syntax Test.	17
Table 6:	Passing Rates in Native Language Arts Courses.	20
Table 7:	Passing Rates for Program and Mainstream Students in Content-Area Courses.	26

JAMAICA HIGH SCHOOL
COMPUTER-ASSISTED BILINGUAL/BICULTURAL
MULTI-SKILLS PROJECT

Location:	197-01 Gothic Drive Jamaica, New York 11432
Year of Operation:	1986-87 Final Year of Three-Year Funding Cycle
Target Language:	Spanish, Haitian Creole/French
Number of Students:	132 students in grades nine through twelve
Principal:	Robert Consigli
Project Director:	Loretta Sanchez

I. OVERVIEW

Jamaica High School's Computer-Assisted Bilingual/Bicultural Multi-Skills Project is a pilot project in its third and final year of operation. Although Jamaica High School had for many years provided LEP students with instruction in English as a second language (E.S.L.), it was only with the inauguration (in 1983) of the project under review that LEP students at Jamaica were provided bilingual and E.S.L. instruction in the content areas.

Jamaica High School is located on top of a hill in a residential neighborhood, two blocks north of the depressed "downtown" section of Jamaica. Forty-six percent of the school's 2,650 students were black and 19 percent were Hispanic. Twenty-three percent of the school's enrollment received public assistance, a small percentage compared to other New York City public schools.

The school is graffiti-free and the atmosphere tranquil. In keeping with the ethnic diversity of its student body, for one day each week Jamaica conducted a school-wide national or state theme day during which teachers spoke about the chosen nation or state, special theme assemblies were held, and students encouraged to wear regional dress. Members of the evaluation team who were present on the Hawaii day observed students and teachers wearing colorful shirts, leis, and flowers and the teacher of a bilingual social studies class used Hawaii's annexation and accession to statehood to illustrate some of the powers of Congress.

PROGRAM DESCRIPTION

As in its first two years of operation, during the year under review, the program generally succeeded in meeting its instructional and non-instructional objectives. The target population consisted of Haitian Creole/French- and Spanish-speaking students of limited English proficiency (LEP) who had never before been served by Title VII. The program's enrollment was 115 in the fall and 127 in the spring.

The original project proposal listed instructional, curriculum, staff development, and affective goals that the project intended to achieve by the end of its third year. Two goals were stressed: a measurable improvement in students' E.S.L. skills at all instructional levels, and the achievement by 75 percent of the project students of a minimum passing grade of 65 percent in Haitian Creole/French or Spanish. Other goals

were to improve students' self-image, introduce a career awareness component linking classwork with the job market, train school staff in the use of microcomputers for LEP pupils, and plan parent workshops on computer use for parents.

Support services included professional guidance and counseling in English and in the two project languages, adult and peer tutoring, and informal counseling by classroom teachers.

As an adjunct to the project's instructional component, a series of trips and extracurricular activities fostered students' appreciation of their native culture and provided contexts for cultural interchange. Program students visited The Hispanic Museum and attended French- and Spanish-language films and concerts; the Haitian and Hispanic clubs presented programs of song, dance, and cuisine at the school's International Night, held in March. The event, a fund-raiser for the Bilingual, Foreign Language, and E.S.L. Department, was attended by 900 parents, students, and teachers. The money raised was used to purchase a TV set and video-recorder.

PROGRAM ORGANIZATION AND STAFF

During its first two years of operation, the project was directed by the chairperson of the Computer Science Department. In September 1986 he/she was replaced by the Chairperson for bilingual, E.S.L., and foreign language instruction. She devoted approximately 40 percent of her time to this function. The project director is a dynamic person who is strongly committed to enriching the educational experience of LEP students. She had 20

JAMAICA HIGH SCHOOL

COMPUTER-ASSISTED BILINGUAL/
BICULTURAL MULTI-SKILLS PROJECT

1986-1987

OEA Evaluation Report

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years of experience in foreign language instruction and two years as an administrator. Like most of the other staff members involved in this project the director's salary was paid by municipal tax-levy monies. Despite having worked closely on the project's instructional component with the previous project director, she said that she had not realized how much administrative work the directorship involved.

Title VII provided funds for two bilingual resource teachers, a paraprofessional for computer instruction, and a secretary. A math teacher with three years of experience served as the Haitian/French bilingual resource teacher, and a Spanish teacher with 16 years of experience served as the Spanish bilingual resource teacher. To lighten the administrative burden on the project director, the bilingual Spanish resource teacher also served as project coordinator.

Both resource teachers provided computer-assisted instruction in E.S.L. and mathematics. Although the program had also proposed providing computer-assisted instruction in native language arts and other content-area courses, the resource teachers discovered that the textbooks used in these courses lacked accompanying software. For this reason, they supplemented classroom instruction in these subjects with small-group and individualized tutoring.

Since they were in close contact with project students over several terms, the resource teachers developed close relationships with students, who tended to look to them as

sources of advice, support, and information.

The paraprofessional for computer support had an associate's degree in computer science and wrote computer programs tailored to the special needs of project students. A member of the evaluation team tried an E.S.L. program during a site visit. Allowing students to practice the comparative form in English and, at their request, to read Spanish and French translations of the exercise sentences, the program seemed both interesting and effective. During the same visit, the computer aide was writing a computer program in BASIC for calculating the mean, median, and mode of a set of numbers.

Bilingual, E.S.L., and native language arts teachers were supervised by the project director. However, the social studies teacher who taught with an E.S.L. approach was supervised by the chairperson of the social studies department. The 16 classroom teachers participating in the project varied in experience from 2 to 22 years, with an average experience of 10 years.

A new principal was appointed to Jamaica High School in 1986. Since he thought the program had succeeded in enabling students to join the educational and cultural mainstream, he gave it his complete support, including high praise in a December 14, 1986 Daily News article devoted exclusively to Jamaica High School's bilingual program. However, both the project director and the principal feared that a decrease in Federal funding would cut into the services the project provided because, they believed, the school could not afford to fund these services itself.

II. STUDENT CHARACTERISTICS

The program served a total of 132 students during the year under review, of whom 115 were present in the fall and 127 were present in the spring. (In other words, 110 students were enrolled both semesters; five were enrolled in the fall only; and 17 were enrolled in the spring only.) Data were also received for nine students who had been included in the program in June 1986 but had left before the beginning of the fall semester. Two of these students earned enough credits during the summer session to graduate, and the rest left for unspecified reasons. Throughout the academic year, 29 students left the program. (See Table 1.)

TABLE 1

Number of Students Leaving the Program

Reason For Leaving	Left By June 1987	Percent of Total
Mainstreamed	12	41.4
Transferred	1	3.4
Left U.S.	6	20.7
Graduated	10	34.5
TOTAL	29	100.0

- Forty-one percent of the students who left were mainstreamed.
- Thirty-five percent graduated.

Data on time in the program were available for 125 of the 127 students present in the program in the spring. Of these, 19 (15 percent) had been in the program for three years; 44 (35 percent) had been in the program for two years; and 62 (49 percent) had been in the program for one year.

Table 2 and Figure 1 present the distribution of program students by country of birth and native language, respectively. Forty-three percent were born in Haiti and spoke Haitian Creole; 57 percent were from Spanish-speaking countries in the Caribbean and Central and South America.

The overall gender ratio was 52 percent female to 48 percent male. Grade ten had the highest percentage of students (40 percent), whereas grade twelve had the lowest (10 percent).

Most program students were recent immigrants from rural areas where access to formal education was quite limited. Several, therefore, had been placed in the ninth and tenth grades regardless of their chronological age. In fact, 58 percent of the students were overage for their grade placement. (See Table 3.) Grade eleven had the highest percentage of overage students (68 percent); grade twelve had the lowest (50 percent).

Seven (26 percent) ninth graders had eight or fewer years of prior education (see Table 4); 14 (27 percent) tenth graders had nine or fewer years. Overall, students averaged 8.7 years of education in their native countries, ranging from 7.8 years for ninth graders to 9.4 years for twelfth graders. The students' average number of years of education in the United States was 1.7,

indicating that, overall, most were relatively new to the school system. Six tenth graders had been to school for twelve or more years, indicating either that they had been held over at some point during their educational careers, or that they were placed in ninth grade when they entered the school despite their previous educational background.

According to project staff, many Haitian students entered the program with some knowledge of English because they had taken English courses in Haiti. Many of their parents also spoke English since they had been living in the U.S. for some time, often for a longer period of time than their children.

TABLE 2

Number and Percent of Program Students by Country of Birth

Country of Birth	Number	Percent
Haiti	56	42.7
Dominican Republic	10	7.6
Puerto Rico	3	2.3
Cuba	2	1.5
Guatemala	21	16.0
El Salvador	11	8.4
Nicaragua	2	1.5
Honduras	1	*
Panama	1	*
Colombia	12	9.2
Ecuador	5	3.8
Venezuela	2	1.5
Argentina	1	*
Paraguay	1	*
Peru	1	*
Spain	2	1.5
TOTAL	131**	100.0

* Less than one percent.
**Information was missing for one student.

- Forty-three percent of the program students were born in Haiti.
- Sixteen Percent were born in Guatemala.
- Nine percent were born in Colombia.

FIGURE 1

JAMAICA HIGH SCHOOL

DISTRIBUTION BY NATIVE LANGUAGE

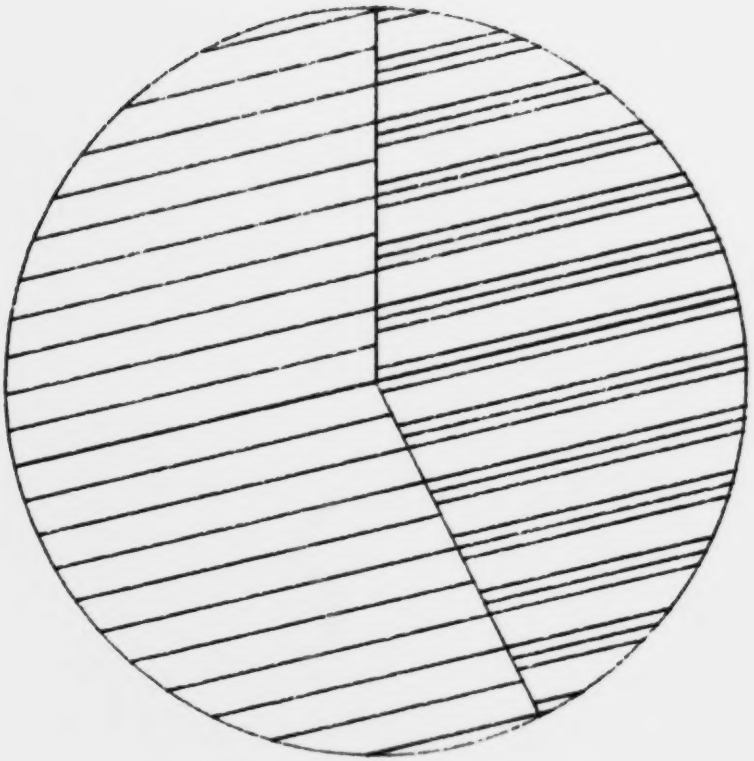

TABLE 3

Number of Program Students by Age* and Grade

Age	Grade 9	Grade 10	Grade 11	Grade 12	Total
14	3	1	0	0	4
15	10	7	0	0	17
16	9	15	3	0	27
17	4	10	8	0	22
18	2	16	14	7	39
19	1	2	4	2	9
20	0	0	3	3	6
21	0	0	2	2	4
TOTAL	29	51	34	14	128**
Overage Students					
Number	16	28	23	7	74
Percent	55.2	54.9	67.6	50.0	57.8

Note. Numbers in bold area reflect expected age range for grade.

*Age on June 30, 1987.
**Data were missing for 4 students.

- Fifty-eight percent of the program students were overage for their grade placement.
- Grade eleven had the highest percentage (68 percent) of overage students, whereas grade twelve had the lowest (50 percent).

TABLE 4

Students' Years of Education by Grade

	Total Years of Education							Years Education Native Country		Years Education United States	
Grade	<8	9	10	11	12	>12	Total	Mean	S.D.	Mean	S.D.
9	7	9	8	3	0	0	27	7.8	1.6	1.2	.8
10	2	12	21	10	3	3	51	8.7	1.2	1.5	1.0
11	1	2	5	15	8	1	32	9.0	1.9	2.0	1.4
12	0	0	0	4	5	5	14	9.4	1.6	2.8	1.2
TOTAL	10	23	34	32	16	9	124*	8.7	1.6	1.7	1.2

* Data for 8 students were missing.

- Overall, students had an average 8.7 years of schooling in their native countries and 1.7 years of schooling in the United States.

III. FINDINGS

This section is based on data taken from documents made available during a visit by the evaluation team, interviews, classroom observations, and an analysis of student achievement data. Findings are presented by the objectives that were stated in the project proposal and approved by the Office of Bilingual Education and Minority Languages Affairs of the United States Department of Education.

ENGLISH AS A SECOND LANGUAGE

-- As a result of participating in the project, students enrolled in levels 1 and 2 of the E.S.L. sequence will master an average of 1.0 objectives per 20 days of treatment.

In 1986-87, E.S.L. students at the beginning and intermediate levels received three periods of E.S.L. classroom instruction and one period of computer-assisted instruction per day; advanced students received two periods of E.S.L. classroom instruction and one period of computer-assisted instruction. Placement in E.S.L. classes was based on the student's level of proficiency measured by the LAB examination and the teacher's recommendation.

Six E.S.L. classes and nine E.S.L. labs were taught each semester in 1986-87. A maximum of 131 students enrolled in two Level 1 classes, two Level 2 classes, and two Level 3 classes; 125 of these students were registered in the corresponding E.S.L. labs; and 123 received computer-assisted instruction. The latter was used to reinforce topics covered in the classroom; advanced

students were also introduced to word processing.

E.S.L. teachers varied in their education and experience: three teachers had 16 or more years of teaching experience and master's degrees; the remaining two had 2 and 3 years of teaching experience and bachelor's degrees.

In a Level 2 E.S.L. class observed by a member of the evaluation team and attended by 9 students, the aim of the lesson was to learn the names of body parts. The teacher used a picture, which she fastened to the blackboard, to introduce each new vocabulary item. After students had repeated each new word several times, she asked how many of each body part Frankenstein had. The reference to a monster amused the students, who enthusiastically volunteered their answers. The teacher repeated each question several times to make sure that all the students understood it and to give more than one student a chance to answer each question. The teacher concluded the class playing a game of "Simon Says." The class was lively and its small size facilitated student-teacher interaction.

In an E.S.L. lab observed by a member of the evaluation team 15 students were learning to transform indirect into direct questions and punctuate them correctly. After teaching the method, the teacher called on student volunteers to transform and correctly punctuate a set of indirect questions. The students participated enthusiastically, and when they didn't understand something they asked questions freely. To promote the retention of new terms, the teacher role-played their meaning, which made

for a lively classroom atmosphere.

Two members of the evaluation team also observed 18 beginning E.S.L. students at work in the computer resource room. The Spanish and Haitian Creole/French resource teachers and the computer aide were present. One teacher was working on English vocabulary related to clothing with six Spanish-speaking students. She spoke English but repeated her explanation in Spanish when she felt that some students had not understood her. The remaining students were working on grammar and English comprehension at the 10 computers with the help of the other resource teacher. She worked with the students individually, using both English and the students' native language. Later, the first group joined the students already working at the computers. The teacher reported that students who were stronger in English had been paired with weaker students. She found that such peer tutoring helped increase the self-esteem of both groups.

Student Achievement in E.S.L.

The assessment instrument used to evaluate the objective in this area was the Criterion Referenced English Syntax Test* (CREST). The CREST was administered at the beginning and end of the fall semester. A mastery score to indicate gains was computed for each student by calculating the difference between pretest and posttest. The number of months of instruction between testings was computed for each student by multiplying the number of months between testings by the student's attendance rate. The number of skills mastered per month was calculated by dividing the mean mastery by the mean number of months of instruction between testings.

Table 5 presents the test results for students who were pretested and posttested with the same level. Of the students who were reported to be taking E.S.L. classes (Levels 1,2, and 3), complete data (levels, pretest score, and posttest score) were available for 70 percent in the fall. Data were not available for

*The Criterion Referenced English Syntax Test (CREST) was developed by the Board of Education of the City of New York to measure mastery of instructional objectives of the E.S.L. curricula, and thus was constructed to maximize content validity. The test contains four items per curricular objective, and mastery of an objective is achieved when three of these items are answered correctly. The test measures mastery of 25 objectives at Levels 1 and 2, and 15 objectives at Level 3. The Kuder-Richardson Reliability Estimates for pretest and posttest administrations of the three levels of the CREST are:

Level 1 -- pretest (.91)/posttest (.96)
Level 2 -- pretest (.94)/posttest (.95)
Level 3 -- pretest (.91)/posttest (.91)

the spring semester.

Examination of Table 5 reveals that students mastered an average of 1.7 CREST objectives per month in the fall. Since the program proposed that students would master one CREST objective per month, the program objective was achieved for the fall semester.

TABLE 5

Results of the Criterion Referenced English Syntax Test

Test Level	Number of Students	PRETEST Mean	PRETEST S.D.	POSTTEST Mean	POSTTEST S.D.	MASTERY Mean	MASTERY S.D.	Mean MASTERY Per Month
1	24	9.4	5.9	15.2	7.1	5.8	3.0	2.4
2	23	11.3	5.7	16.0	5.9	4.7	2.9	1.8
3	30	8.9	3.6	11.5	2.8	2.6	1.8	1.0
TOTAL	77	9.8	5.1	14.0	5.7	4.2	2.9	1.7

NATIVE LANGUAGE ARTS (N.L.A.)

-- As a result of participating in the project, at least 75 percent of the students will score at or above the 65 percent passing criterion in native language arts classes (Spanish and Haitian Creole/French) each semester/year.

Six Spanish classes, containing both project and mainstream students, were provided both semesters. Four French classes, of which the two lowest levels contained only project students, were provided in the fall. In the spring, four classes were also provided; the two lowest levels consisted mainly but not exclusively of project students, and in the spring the Advanced Placement French class consisted mainly of project students.

In a Spanish class observed by a member of the evaluation team the teacher was leading 25 students through a discussion of a reading "Feliz Cumpleanos E.U.A." from their textbook, Espanol y su estructura, segundo libro. The instructor introduced the topic of the reading through a song "Los hombres buscan el camino de la libertad," which all students sang to the teacher's guitar accompaniment. The song, which dealt with the topic of fighting for one's country, was going to be part of Jamaica High School's International Night festivities. After the song, the teacher asked students to define words from the reading. The students eagerly answered each question.

In an intermediate French class observed by a member of the evaluation team the teacher led a discussion of the movie "La Passant" which the students had seen at Hofstra University the previous day. Twenty-four students were enrolled in the class,

of whom 14 were in the project. The 17 students who attended the class were asked to list the movie's themes and to relate one of them, the relationship between mothers and sons, to their own experience. The class was conducted in French, but new English vocabulary terms were introduced and homework consisted of translating several sentences from English into French.

A member of the evaluation team also observed an advanced French class. All eleven students were current or former project students. The teacher, who had college-teaching experience, began the lesson with a question-and-answer session on whether the effects of new scientific discoveries -- such as nuclear fission -- are always positive. The second part of the lesson was an analysis of a poem, "Zone," which was in their textbook, Problemes Pour Les Cours Avances, 1985-86, and which they had been assigned to read the night before. The teacher asked the class to list its themes. "Nonconformism," "individualism," "stability," "Baudelarian imagery," and "scenes from every day life" were some of their answers. The class was extremely attentive and well behaved, and all the students took part in the discussion. Most of them spoke excellent French. The instructor corrected them whenever they mispronounced a word. The students were extremely respectful, addressing the teacher as "Madame" whenever they spoke to her. The teacher was pleased with her students' industriousness and intellectual sophistication. She reported that all of them had received an excellent education in Haiti.

Student Achievement in Native Language Arts

Passing rates for native language arts courses are reported in Table 6. Examination of the table shows that the program objective of a 75 percent passing rate was achieved both semesters. Both Spanish- and French-speaking students surpassed the objective criterion fall and spring.

TABLE 6

Passing Rates in Native Language Arts Courses

	Number of Students	Percent Passing	Number of Students	Percent Passing
French	37	86.5	41	87.8
Spanish	46	93.5	43	88.4
Total		90.4		88.1

- The project objective of 75 percent passing native language arts courses was achieved both semesters.

CONTENT-AREA SUBJECTS AND SPECIALIZED COURSES

-- As a result of participating in the project, the percentage of students at or above the 65 percent passing criterion in substantive subjects will be as high as that of mainstream students.

The project offered one bilingual (Spanish) general biology and one biology (Spanish) global history class both semesters. In addition, sheltered English for E.S.L. students was used in two American government classes in the fall, and two economics classes in the spring. Project students also were enrolled in one of the six non-graded-computer education classes that were held in the computer resource room.

The curricula of sheltered English content-area classes paralleled that of mainstream ones, and the teacher reported that they differed from mainstream ones only in the amount of time spent in explaining new terms and vocabulary. On the other hand, Spanish bilingual classes were conducted for the most part in Spanish with the exception of important terms whose English translations were introduced, and summaries, which were given in English. Bilingual teachers also encouraged students to do their homework in English and to try to answer questions in English. Moreover, several sections of bilingual history were conducted jointly with a mainstream class in order to increase the amount of English used by Spanish speaking-students.

Because of the lack of bilingual Haitian/Creole or French content-area classes, Haitian students were often unable to attend content-area classes when they first entered the program; consequently they later had to take a large number of content-

area courses. The Haitian Creole/French resource teacher provided tutoring in Creole, French, or English depending on the student's preference. She found that students experienced the greatest difficulty in American Government because they encountered substantive as well as linguistic problems.

A member of the evaluation team observed several content-area classes. A visit was made to an E.S.L. economics class. Thirty students attended. The day's lesson, part of an on-going unit on labor-management relations, was devoted to a specimen labor-management dispute between the A.P. for social studies and a mainstream student employed by that department to sell newspapers in school. Because of a slowdown in sales, the A.P.-social studies had decided to cut the student's wages and the student was protesting his decision. The A.P.-social studies had presented his case the day before, and the student was arguing his case during the class observed by a member of the evaluation team. After the student completed his presentation and called upon his fellow students to support his cause, the teacher asked the class to discuss what the specimen dispute, combined with their textbook readings, had taught them about labor-management. The discussion was conducted in English. Only a few students who were especially competent in English participated in the discussion, some taking the side of management and some of labor. The teacher made no attempt to involve students who did not volunteer answers, probably because he did not want to interrupt the flow of discussion. Because no

E.S.L. instructional features were observed, overall, the class appeared no different than a mainstream class.

A bilingual general science and a bilingual social studies class were also observed. The bilingual general science class was conducted in a cheerful room decorated with colorful drawings done by students and on course-related topics. The subject of the day's lesson was the human ear. The teacher used English and Spanish as she repeatedly referred to a vivid drawing she previously had made on the blackboard. Students were called upon to name each part of the ear in Spanish and English, while the teacher wrote both words next to the part referred to. The teacher reported that students had entered the class without knowing any English scientific terminology, but had made such remarkable progress that they could write short reports in English.

The bilingual global history class was attended by 24 students. The topic of the day's lessons was the role of Congress in the legislative process. The lesson was conducted in Spanish, but throughout the lesson the teacher asked students to provide the English translations of Spanish terms, which then were written on the blackboard. The teacher began the class by reviewing the previous day's lesson and asking the students about its main points, which the students eagerly answered. During the day on which the class was observed the entire school was celebrating a theme day on Hawaii. Therefore, the teacher introduced the lesson by discussing when and how Hawaii became a

state, i.e., through an act of Congress. The teacher then divided students into groups that presented arguments to the class for "legislation" on such subjects as discipline and dress code. Their arguments had to be rooted in school realities and promote the majority's general welfare. As homework students had also to write about a piece of legislation discussed in a daily newspaper. The teacher said that material available on the market was inadequate for the courses he taught, so he had to develop his own.

Student Achievement in Content-Area Courses

Table 7 presents the passing rates of program and mainstream students in mathematics, science, and social studies both semesters. Statistical significance of the difference between the passing rates of program and mainstream students was determined through a *z*-test for the significance of the difference between two proportions.* This procedure tests whether the difference in the rates of two independent groups is greater than can be expected from chance variation.

Examination of Table 7 reveals that the program objective was met in all three subject areas in both fall and spring. In fact, during both semesters, project students' passing rates in science and social studies were significantly higher than those of mainstream students. Only in math was there no

*Bruning, J.L. and Kintz, B.L. Computational Hardbook of Statistics (Glenview, IL: Scott, Foresman and Company, 1968).

significant difference in the passing rates of program and mainstream students. Since the objective proposed that program students' passing rates would be as high as those of mainstream students, the objective was met in all areas. Project students' lower passing rates in math may reflect the fact that they were not provided bilingual math instruction.

TABLE 7

Passing Rates for Program and Mainstream Students in Content-Area Courses

	BILINGUAL PROGRAM		MAINSTREAM CLASSES		
COURSE	Number of Students	Percent Passing	Number of Students	Percent Passing	z-test Value
Math	56	62.5	850	60.4	.3
Science	41	85.4	530	63.4	2.8*
Social Studies	39	87.2	491	70.3	2.3*
TOTAL		76.5		63.8	
		SPRING			
Math	33	54.5	478	54.8	0
Science	62	87.1	1197	75.8	2.0*
Social Studies	42	85.7	785	72.4	1.9*
TOTAL		78.8		70.6	

Note: This table is based on data provided by the project director.

*Statistically significant at the .05 level.

- Math classes included Fundamental Math 2 and Sequential Math 2.
- Science classes included general science 2, life science, and geology.
- The program objective was achieved in all subjects both semesters.

AFFECTIVE DOMAIN

-- As a result of participating in this project, students will maintain an attendance rate that is equal to or greater than the attendance rate of mainstream students.

-- As a result of participating in this project, students' suspension rate will be the same or lower than the suspension rate of the mainstream students.

The project office reported that one program student who had been mainstreamed was enrolled in several honors classes; another student had won several essay contests and a Pen and Scroll Award for pieces published in the school newspaper; one program student was offered a basketball scholarship; and 19 project graduates had been admitted to colleges and universities. Finally, a follow-up of the 21 students who had been mainstreamed at the end of the spring 1986 term and still were attending Jamaica High School in the spring of 1987 shows they had passed 76 percent of their fall classes.

Attendance and Suspension Outcomes

Statistical significance of the difference between program and mainstream rates was determined through a *z*-test for the significance between two proportions.

The attendance rate of program students was 90 percent, some five percentage points higher than the school's overall attendance rate. The *z*-test results ($z=1.77$) indicated that the two attendance rates were statistically different at the .05 level of significance. Thus the program objective was achieved.

Only one program student was suspended during the academic

year, as opposed to 84 mainstream students. Thus the objective that project students' suspension rate will be the same or lower than the suspension rate of the mainstream students was achieved.

CURRICULUM DEVELOPMENT

In its first two years the project developed basic skills software in E.S.L. grammar and mathematics, and curricular materials in native language arts, computer-assisted E.S.L., mathematics, E.S.L. keyboarding, computer literacy. During the academic year 1986-87, original or adapted curricular materials were developed in bilingual science, global history, E.S.L. American history, and E.S.L. keyboarding. The project also continued to develop software programs for the teaching of E.S.L. and mathematics.

STAFF DEVELOPMENT

Title VII, foreign language, and E.S.L. teaching staff met monthly to review student progress, evaluate curricula, and monitor project goals. As previous evaluation reports note, in keeping with the original project proposal's staff-development goals, by the end of the first year the project staff had developed basic knowledge of how to use computer hardware and software and to teach E.S.L. pupils. In-house staff-development activities continued during the year under review. They emphasized E.S.L. and N.L.A. teaching techniques. In addition, a workshop on the teaching of E.S.L. social studies was also held during the spring.

The project director and staff members attended the following off campus staff-development activities: bilingual computer management and software workshops sponsored by the New York Bilingual Educational Multifunctional Support Center, Teachers College of Columbia University, and the IBM corporation; the Instructional Fair at Hofstra University; and a presentation of the Cooperative Education Program for E.S.L. and bilingual students at York College. The project director also attended two conferences on bilingual education sponsored by the Bureau of Bilingual Education and the New York State Association of Bilingual Educators.

ACADEMIC ADVISEMENT AND CAREER PLANNING

Using individual, small-group, and large-group guidance techniques, all project students met with the bilingual guidance counselor, the E.S.L. coordinator, or the resource-room teachers for academic advisement and career planning.

Students also met three times per semester with school and program staff to review report card grades and attendance, plan high school programs and applications to college, arrange tutoring assignments, and use Metroguide and Career Scan computerized systems to learn about college and vocational opportunities.

Vocational training and career education was a major goal of this project. Since its second year of operation, Title VII students have held jobs in neighborhood and school offices, enabling them to use their bilingual business and academic skills

in applied settings. Job-related skills were also acquired in E.S.L. keyboarding classes, at the computer lab, and in several other career-oriented curricular and extracurricular activities. In conjunction with the Cooperative Education Program, the E.S.L. teacher worked one period per day placing students in part-time jobs.

In the spring semester, 11 program students were enrolled in a Careers in Education class that originally had been designed for mainstream students only. Supervised by the grade adviser, the students in this class spent the last two periods of each school day on field trips, lectures at St. John's University, and working as interns at local pre-schools.

PARENTAL INVOLVEMENT

Project parents participated in the program in several ways. According to project data, a maximum of seven parents attended the six advisory committee meetings that were held during the academic year. Parents on the advisory committee also accompanied students on project and school trips. According to the project director, a large number of project parents attended the school's International Night and its career and College Night. A parent-teacher conference was held each semester. According to project staff members, although program parents' level of participation in school affairs was not high, it surpassed the schoolwide average.

However, parental participation in school and project affairs was lower than the previous year. Following the

proposal's guidelines, in 1985-86 the project organized nine computer workshops for parents. Attendance ranged from 12 to 40. By contrast, the project director said that the low level of parental interest made it possible to hold only one such workshop during the year under review.

In February, 1986, a New American Center coordinated by the E.S.L. social studies teacher had been established to provide biweekly workshops on employment, legal, and welfare issues to immigrant parents. Several project parents had attended these workshops and several project students worked there as interpreters and translators. Unfortunately, despite the school administration's strong support the center had to be discontinued after the fall semester because operating funds were lacking. The school hoped Rockefeller Foundation Funds would be available to operate the system throughout 1987-88.

LONG-RANGE OBJECTIVES

The project proposal listed the following long-term objectives: the implementation of a comprehensive computer-assisted instructional program for grades nine through twelve; student participation in vocational training and career educational program; acquisition of job skills through formal instruction, internships, and job placement; and parental involvement through program contacts participation in the Bilingual Parental Advisory Committee, and computer workshops.

The program achieved all these objectives by its second year of operation. However, no specific plans were made to assure the

continuation of computer-assisted instruction after Title VII funds are discontinued.

IV. CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

In its third year of operation, Jamaica High School's Computer-Assisted Bilingual/Bicultural Multi-Skills Project used computerized and non-computerized instruction to help 126 Spanish- and Haitian Creole/French-speaking LEP students develop their English-language, native-language, and content-area skills.

Career-planning activities, tutoring and extracurricular activities were important complements to the project's instructional component. Curriculum development and staff development activities, involving TItle VII staff, and foreign language and E.S.L. teachers, were equally important components of the project.

In 1986-87, the program was generally successful in meeting its instructional and non-instructional objectives. Students actively participated in computerized instructional classes held in the project's computer resource room. Student performance in E.S.L., native language arts, and content-area subjects met the criteria proposed. The objectives for student attendance, and suspension, curriculum development, career planning, and staff development were attained.

RECOMMENDATIONS

The following recommendations are offered to improve the project's future functioning:

-- The number of E.S.L. content-area classes should be increased to allow non-Spanish-speaking students to enroll in credit-bearing classes during their first semesters at Jamaica High School.

-- As recommended in last year's evaluation report, more training in E.S.L. teaching techniques is desirable for teachers of content-area courses taught in English and geared specifically to LEP students, such as American studies, and math -- subjects in which program students encountered major difficulties.

-- Additional computer workshops for parents should be held. Their success in 1986-87 demonstrated their potential for increasing parental involvement.

-- Plans should be made to ensure that the project's target group is able to use the computers acquired with Title VII funds after the Title VII project is terminated.